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On V-semirings and semirings all of whose cyclic semimodules are injective

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Abstract

© Taylor & Francis Group, LLC. In this article, we introduce and study V-and CI-semirings—semirings all of whose simple and cyclic, respectively, semimodules are injective. We describe Vsemirings for some classes of semirings and establish some fundamental properties of V-semirings. We show that all Jacobson-semisimple V-semirings are V-rings. We also completely describe the bounded distributive lattices, Gelfand, subtractive, semisimple, and antibounded, semirings that are CI-semirings. Applying these results, we give complete characterizations of congruence-simple subtractive and congruence-simple antibounded CI-semirings which solve two earlier open problems for these classes of CI-semirings.

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Keywords

CI-semirings, Congruence-simple semirings, Injective semimodules, Morita equivalence of semirings, Semisimple semirings, Simple semimodules, V-semirings